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3.1 Research Design

The design of the research was a Quasi Experimental Design Equivalent Pre-test and Post-test Group Design” Two groups served as the experimental groups. John W. Creswell (2008: 299) explains that experiment is testing an idea (practice) to determine whether it influences an outcome or dependent variable. Creswell also states that when individuals are not randomly assigned, the procedure is called a quasi experiment (2009: 155). Ary Donald (2007: 282) states that quasi experimental design is used where the true experimental design is not feasible. According to L.R Gay, the experimental method is a method of research that can truly test hypothesis concerning with cause and effect relationship in the experimental research (2000: 349). Gay said “An experiment typically involves a comparison of two groups (although as you will see later, there may be only one group, or there may be three or more groups).

The experimental comparison is usually one of three types: 1. Comparison of two different approaches (A versus B); 2. Comparison of a new approach and the existing approach (A versus no A); 3. Comparison of different amount of a single approach (A little of A versus a lot of A)” (2000: 368). Type 1 (comparison of two different approaches) is conducted in this research. In this research, there were three variables; Generating Interaction between Schemata and Text (GIST) Strategy and Group Mapping Activity (GMA) Strategy were

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independent variables, while the students' reading comprehension was dependent variable. Therefore the experimental class was provided with the treatment, and post-test. It can be drawn in the following table:

Table III.1
The Research Design

E1	O1	X1	O2
E2	O1	X2	O2

Figure (Gay, 2000:392)

E1 : Experimental Group 1

E2 : Experimental Group 2

X1 : Independent Variable 1 (GIST Strategy)

X2 : Independent Variable 2 (GMA Strategy)

O1 : Pre-test

O2 : Post-test

3.2 The Location and the Time of the Research

The location of this research was conducted at Junior High School 40 Pekanbaru. It was located at Garuda Sakti street. The duration of time to conduct of this research was within one month September 2016.

3.3 The Population and Sample of the Research

3.3.1 Population

The population of this research was the eighth grade of State Junior High School 40 Pekanbaru in 2016-2017 academic years. There were four classes. The

total number of the eighth grade students were 165 students. The following table is the details.

Table III.2
The Total Population of the Eighth Grades at
Junior High School 40 Pekanbaru 2016/2017

No	Class	Number of Students
1	VIIIA	42
2	VIIIB	42
3	VIIIC	40
4	VIIID	41
	Total	165

3.3.2 Sample

The research sample was a cluster sampling. Gay (2000:129) states that cluster sampling randomly selects the groups, not individuals. All the members of selected groups have similar characteristics. Among 4 classes of the eight grades, two classes were taken as the sample of this research as follows:

Table III.3
The Total Sample of the Research

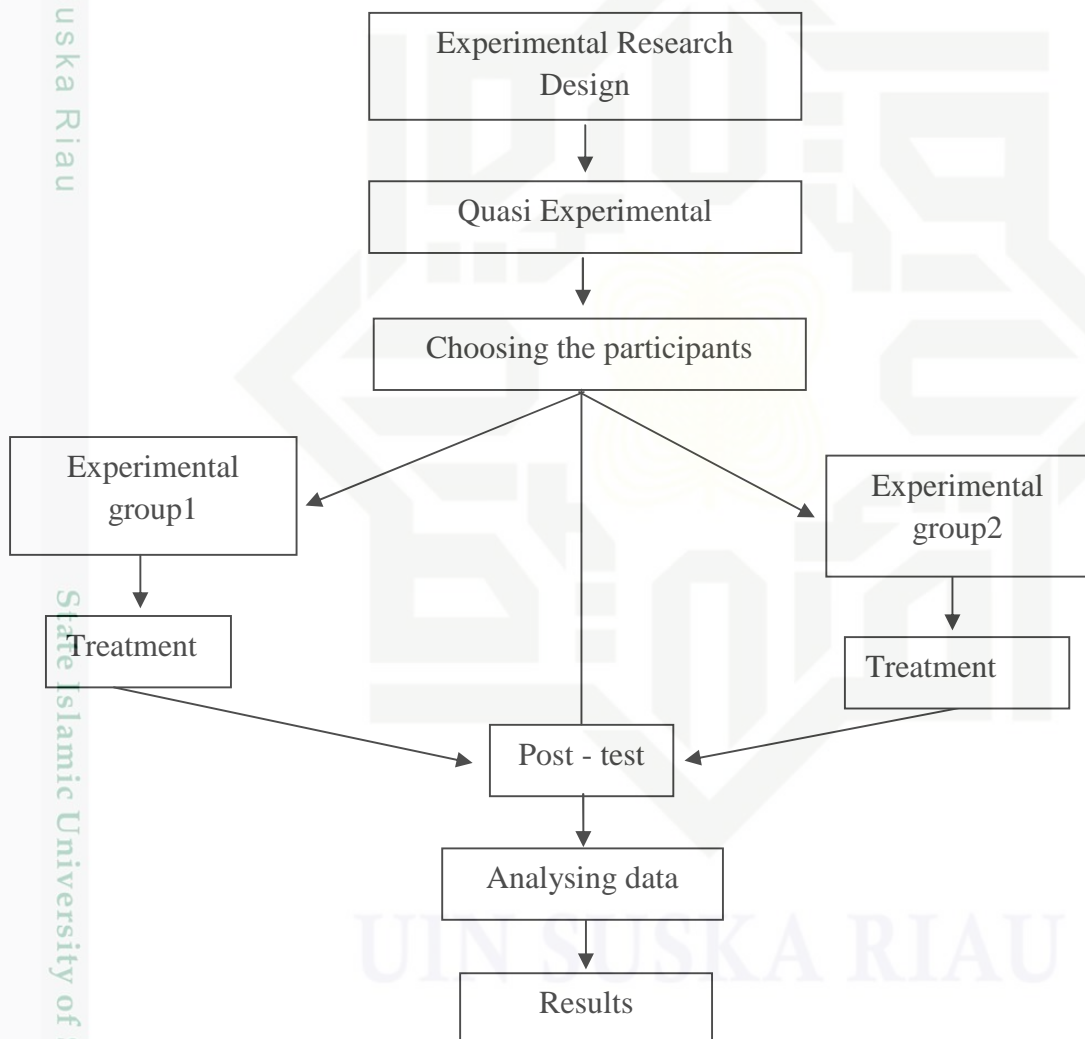
No	Class	Male	Female	Total number of Students
1	VIII/A	20	22	42
2	VIII/B	19	23	42
	Total	39	45	84

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In choosing VIII.A and VIII.B as the sample of this research the writer asked the teacher to determine which class was homogent and could be used as the research sample.

3.4 Research Procedure



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3.5 Research Instruments

To collect the data, reading test was administered as the instrument of this study. The pre-test and post- test would be administered to two classes which consisted of VIII A and VIII B. The pre-test would be administered before the treatment and the post-test aimed at finding out the students' reading comprehension after treatment. The treatment was given by teaching GIST and Group Mapping Strategies. This activity was also intended to find out whether the students' skills kept holding of the material after doing the treatment.

3.6 Validity and Reliability Test

3.6.1 The Validity of Instrument

Before the test was given to the sample, the test would try out for students of the eighth grade at State Junior High School 40 Pekanbaru. The purpose of try out was to find out validity and realibility of the test. Validity is the most important characteristics of a test or measuring instrument can process. Brown (2001:387) explains that validity is the degree to which the test actually measures what it is intended to measure.

Harmer (2001:322) says that a test is valid if it tests what it is supposed to test. In other words, Validity is a kind of test to measure what have already taught by the teacher and the teacher wants to know his/her students' ability in that material.

The points of difficulty level and discrimination index will be analyzed by using a formula (Heaton, 1975 : 178).

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$$FV = \frac{R}{N} \times 100\%$$

Where :

FV : The index of difficulty

R : The number of correct answers

N : The number of respondents

To find out the validity of the items of test, it was used Split-Half formula by using SPSS 20 version by looking at the corrected item - total correlation (correlation between score item and score total item = r_{observed}) in table Item-Total Statistics.

To determine whether the test is valid or not, the value r_{observed} should be compare with r_{table} . The number of item is 30.

If the value of $r_{\text{observed}} > r_{\text{table}}$ = valid

If the value of $r_{\text{observed}} < r_{\text{table}}$ = invalid

The result as below:

Table III.4

Instrument Validity

Number of Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation (Validity)	r table df=42-2	Result
A1	16.9286	32.995	.297	7.193	Valid
A2	16.9524	32.437	.395	7.193	Valid
A3	16.9286	31.775	.521	7.193	Valid
A4	16.8333	32.776	.363	7.193	Valid

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Number of Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation (Validity)	r table df=42-2	Result
A5	17.2381	33.210	.288	7.193	Valid
A6	16.9762	32.853	.317	7.193	Valid
A7	16.9524	31.461	.574	7.193	Valid
A8	16.7143	32.111	.593	7.193	Valid
A9	16.9524	32.339	.412	7.193	Valid
A10	16.5952	34.100	.253	7.193	Valid
A11	17.0238	31.634	.536	7.193	Valid
A12	16.8095	31.134	.705	7.193	Valid
A13	16.7619	32.088	.546	7.193	Valid
A14	16.8095	31.134	.705	7.193	Valid
A15	17.0952	32.235	.431	7.193	Valid
A16	16.9048	32.088	.468	7.193	Valid
A17	16.9048	33.015	.298	7.193	Valid
A18	16.9762	32.268	.422	7.193	Valid
A19	16.9762	33.097	.274	7.193	Valid
A20	16.9762	33.487	.205	7.193	Valid
A21	17.1667	33.215	.266	7.193	Valid
A22	16.8095	33.182	.294	7.193	Valid
A23	17.0476	31.949	.478	7.193	Valid
A24	16.6905	35.048	-.056	7.193	Invalid
A25	17.1667	34.533	.030	7.193	Invalid
A26	17.0476	35.705	-.169	7.193	Invalid
A27	16.8095	31.134	.705	7.193	Valid
A28	16.9762	36.170	-.245	7.193	Invalid
A29	17.1905	34.158	.099	7.193	Invalid
A30	16.9762	31.731	.520	7.193	Valid

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From the result of calculation by using SPSS, it can be concluded that 25 items are valid; item 1, item 2, item 3, item 3, item 4, item 5, item 6, item 7, item 8, item 9, item 10, item 11, item 12, item 13, item 14, item 15, item 16, item 17, item 18, item 19, item 20, item 21, item 22, item 23, Item 27, item 30, and item are invalid. So, the invalid items are removed by the writer, the item number 25 is removed by the writer too. The purpose is to easier the scoring. The results of validity after the invalid items are changed and it is shown below:

Table III.5
Instrument Validity

Number of Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation (Validity)	r table df=42-2	Result
A1	16.9286	32.995	.297	7.193	Valid
A2	16.9524	32.437	.395	7.193	Valid
A3	16.9286	31.775	.521	7.193	Valid
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A6	16.9762	32.853	.317	7.193	Valid
A7	16.9524	31.461	.574	7.193	Valid
A8	16.7143	32.111	.593	7.193	Valid
A9	16.9524	32.339	.412	7.193	Valid
A10	16.5952	34.100	.253	7.193	Valid
A11	17.0238	31.634	.536	7.193	Valid
A12	16.8095	31.134	.705	7.193	Valid
A13	16.7619	32.088	.546	7.193	Valid
A14	16.8095	31.134	.705	7.193	Valid
A15	17.0952	32.235	.431	7.193	Valid

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A23	17.0476	31.949	.478	7.193	Valid
A24	16.8095	31.134	.705	7.193	Valid
A25	16.9762	31.731	.520	7.193	Valid

From the text above, it can be concluded that after removing the invalid items, the result of all items' calculation is valid. So, in this research, the item for the test consists of 25 questions.

3.6.2 The Reliability of the Instrument

Reliability refers to whether a test measure something well. Harmer (2001:322) says that reliability is a test should give consistent results. It means that, reliability is used to measure the quality of the test scores and the consistency of the test. In finding reliability of instrument of this research, the formula is taken from Heaton (1975: 164) as follow :

$$r_{11} = \frac{N}{N-1} \left(1 - \frac{m(N-m)}{N \sum X^2} \right)$$

Where : $M = \frac{\sum x}{N}$ and $S^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N}$

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- r_{ii} : Reliability of the test
 N : The number of item in the test
 M : The mean score of all the test
 S^2 : The standard deviation of all the test score

Table III.6

Criteria Coefficient of Reliability

Coefficient of Reliability	Criteria
0,80 r_{11} 1,00	Highest reliability
0,60 r_{11} 0,79	High reliability
0,40 r_{11} 0,59	Middle reliability
0,20 r_{11} 0,39	Low reliability
0,00 r_{11} 0,19	Lowest reliability

The result of test reliability shows as follows:

Table III.7
Reliability Statistics of Reading Comprehension

Cronbach's Alpha	N of Items
.834	30

From the results of calculation by using SPSS, presents that the value of Cronbach's Alpha in Reading test was 0.834, it was bigger than 0.5. The data was reliable. It was categorized as high reliability.

3.6.3 The Test Blue Print

In this research, the tests were given 3 times. The first test (try out test) was given to other students, which had similar levels of grade and the purpose of trying out was to determine the validity and reliability of the test. The second test (pre-test) was given to the experimental group 1 and the experimental group 2 to determine the homogeneity and the normality of the test. And the last test (post-test) was given to the experimental group 1 and the experimental group 2 to determine the result of the students' score after being taught by using GIST strategy and GMA Strategy.

a. Try out

Table III.8

Try Out Blue Print

No	Indicators	Topic	Item Number	Total
1	Finding out the main idea in descriptive text	Masjidil Haram	1,6,11,16,22,26	6
2	Identifying the meaning of unfamiliar words in	My Blewuk	3,9,12,20,23,27	6

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	descriptive text			
3	Determining factual information of descriptive text	Rama Bookshop	5,7,13,17,21,28	6
4	Identifying the generic structure in descriptive text	My White Rose	4,8,14,19,24,29	6
5	Finding out inference of descriptive text	Ki Hadjar Dewantara	2,10,15,18,25,30	6
Total				30

b. Pre-test and Post-test

Table III.9

Pre-test and Post-test Blue Print

No	Indicators	Topic	Item Number	Total
1	Finding out the main idea in descriptive text	Masjidil Haram	1,6,11,16,22	5
2	Identifying the meaning of unfamiliar words in descriptive text	My Blewuk	3,9,12,20,23	5
3	Determining factual	Rama	5,7,13,17,21	5

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	information of descriptive text	Bookshop		
4	Identifying the genetic structure in descriptive text	My White Rose	4,8,14,19,24	5
5	Finding out inference of descriptive text	Ki Hadjar Dewantara	2,10,15,18,25	5
Total				25

3.7 Data Collection Technique

The technique used in collecting the data of this research was by using test and observation. The test was used to determine the student's reading comprehension by using GIST and Group Mapping Activity strategies at the eighth grade students of State Junior High School 40 Pekanbaru. The type of the test was multiple choice tests. There were two tests: pre-test which was given before the treatment and post-test was given after the treatment. After the students do the test, then the total score was taken from the result of the reading comprehension test.

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The classification of the students' score can be seen from the table below:

Table III.10

The Classification of the Students' Score

Score	Categories
80 – 100	Very good
66 – 79	Good
56 – 65	Enough
40 – 55	Less
30 – 39	Fail

3.8 Data Analysis Technique

The technique of data analysis used in this research was T-test formula by using SPSS (Statistical Package for the Social Sciences). In analyzing the data, it was used the checklist on the observation list and scores of pre-test and post-test of the experimental group 1 as well as the experimental group 2. These scores were analyzed statically. It was used the score of experimental class 1 and experimental class 2 and the techniques are as follows:

3.8.1 Independent Sample T-test

To find out whether there is a significant difference or there is no significant difference between two or more variables which can be analyzed by using Independent Sample t_{test} . Gay (2000:484) states that the t-test for

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independent sample is used to determine whether there is a significant difference between the means of two independent samples. The formula is as follows:

$$t = \frac{M_X - M_Y}{\sqrt{\frac{SD_X^2}{N_1 - 1} + \frac{SD_Y^2}{N_2 - 1}}}$$

Where:

t = The value of comparing two means

M_X = Mean of the score in pre-test

M_Y = Mean of the score in post-test

SD_X = Standard deviation of experimental group

SD_Y = Standard deviation of control group

N_1 = Number of the sample in pre-test

N_2 = Number of the sample in post-test

1 = the constant number

In this study to see if there is a significant difference between the mean of the score of both experimental group 1 and experimental group 2 is consulted with the value of Sig. 2 tailed, which is hypothesized:

$H_0: p > 0.05$

$H_a: p < 0.05$

H_0 is accept if $p > 0.05$ or there is no effect after giving the treatment using GIST and Group Mapping Activity strategies on students' reading comprehension.

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Ha is accept if $p < 0.05$ or there is effect after giving the treatment using GIST and Group Mapping Activity strategies on students' reading comprehension.

3.8.2 Paired Sample T-test

Paired Sample t-Test is known also as Non-independent sample t-test.

Gay (2000: 488) states that t-test for non independent samples is used to compare groups that are formed by some type of matching or to compare a single group's performance on a pre-test and post-test or on two different treatments.

Pre-test and post-test scores were used in the experimental class in order to investigate the significant effect of using GIST and Group Mapping Activity on students' reading comprehension at the eighth grade of State Junior High School 40 Pekanbaru. To obtain the data, SPSS 20 is used.

The formula of paired-sample t-test:

$$t = \frac{\bar{D}}{\sqrt{\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)}}$$

D : Gain Score ($D = X_2 - X_1$)

In this study to see if there is a significant difference between the mean of the score of both experimental group 1 and experimental group 2 is consult with the value of Sig. 2 tailed, which is hypothesized:

$H_0: p > 0.05$

$H_a: p < 0.05$

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H_0 is accepted if $p > 0.05$ or there is no significant effect after giving the treatment using GIST and Group Mapping Activity strategies on students' reading comprehension.

H_a is accepted if $p < 0.05$ or there is a significant effect after giving the treatment using GIST and Group Mapping Activity strategies on students' reading comprehension.

Afterward, it is better to find the coefficient effect of T-test by following formula:

$$\tilde{\omega}^2 = \frac{t^2}{t^2 + n - 1}$$

$$\text{eta squared} = \tilde{\omega}^2 \times 100\%$$

Where:

eta squared: Coefficient effect

$\tilde{\omega}^2$: Coefficient.